

REMARKS

Careful consideration has been given by the applicants to the Examiner's comments and rejection of the claims, as set forth in the outstanding Office Action, and favorable reconsideration and allowance of the application, as amended, is earnestly solicited.

Applicants note the Examiner's formal grounds of rejection of Claims 1-20 under 35 U.S.C. §112, second paragraph, as being indefinite, as detailed in the Office Action. However, applicants respectfully take issue with various of the points raised in connection therewith, noting that in essence, various constituents of the invention, as set forth and defined in the claims, are considered to be within the current state of the art, as recognized by one who is skilled in this particular technology.

Pertaining to the term "ultra-hard material", this is considered to be acceptable and particularly with regard to this technology, inasmuch as the application pertains to the concept of utilizing diamond, cubic boron nitride, and other similar very hard and abrasive materials. Consequently, this particular technology utilizes the term "ultra-hard" to describe such abrasive materials, which contain diamond, cubic boron nitride, or other materials of similar hardness and abrasiveness. This is clearly in contrast with the types of materials, such as carbides, nitrides and oxides, which possess a considerably lower degree of hardness and are outside the sphere of applicability of the "ultra-hard" materials. That particular difference is clearly known to one skilled in the art in this technology or industry, wherein the term "ultra-hard" is deemed to be limiting and defined as being well-understood.

However, in order to further clarify the present invention as claimed pertaining to the term "ultra-hard", the materials are designated herein as constituted of polycrystalline. Consequently, the claims have all been limited to "polycrystalline ultra-hard materials", as clarified by the description on Page 3, third paragraph of the specification, wherein this term is deemed to be well-known to one of skill in this art.

Furthermore, in order to additionally clarify Claim 1, applicants have deleted the reference to “components for making the ultra-hard material”, so as to define the claim as only polycrystalline ultra-hard material in the “as-sintered” form.

Consequently, commensurately, amendments to the material types as being “polycrystalline ultra-hard” have been incorporated throughout the claims, as being fully supported by the specification.

Concerning the Examiner’s objection to the term “type”, as set forth particularly in Claim 8, applicants respectfully take issue with this objection inasmuch as the invention pertains to composite materials, as defined, which comprises the same type of polycrystalline “ultra-hard” materials but of different grades. This becomes clear from a reading of the illustrative embodiment as described in Page 3 in the second and third last paragraphs of the disclosure. Hereby, the present invention has also been described as having application to composite materials comprising two different types of ultra-hard materials, such as PCD and PcBN, by way of example. This is also clear from the illustrative embodiments described in the last paragraph on Page 3 and the first paragraph on Page 4 of the specification. Consequently, the use of the word “type” is deemed to be definite in that regard, wherein Claim 1, and the dependent claims, have been amended to render it clearer that both the core and matrix polycrystalline ultra-hard materials can differ in grade or type.

Moreover, with regard to the use of the word “type, this is employed in Claim 11 to cover both materials, wherein PcBN grains are sintered to themselves, and also PcBN base materials where the PcBN grains are sintered with any number of ceramic phases, as described on Page 3, last paragraph of the specification. Consequently, the language is clearly supported by the disclosure and would be deemed clear to one of skill in this particular technology, so as to be definite in the meaning thereof within the context of applicability as claimed and described herein.

With regard to the term “substantially” in Claim 12, this has been deleted so as to render this particular objection moot.

Reverting to the art, applicants note the rejection of Claims 1-7 and 9-13 under 35 U.S.C. §102(b) as being anticipated by Fang, et al, U.S. Patent No. 6,454,027, as extensively detailed in the Office Action; and the rejection of Claim 8 under 35 U.S.C. §103(a) as being unpatentable over Fang, et al., as also detailed in the Office Action.

However, upon careful consideration of the prior art reference of record, applicants note that the claims, as amended herein, clearly and patentably distinguish thereover.

Fang, et al. describe a PCD composition having a microstructure comprising a first region constituted of a plurality of granules formed from materials selected from PCD, PcBN or mixtures thereof. The granules of the first region are distributed in a substantially continuous second region matrix that substantially separates the first region granules from one another. The second region is comprised of a cermet material formed from the group of materials including carbides, nitrides, carbonitrides, borides and mixtures thereof. In contrast therewith, Claim 1, as amended herein, is directed to a composite material that contains cores of polycrystalline ultra-hard material (defining a “first region”) in a matrix of a different type or grade of polycrystalline ultra-hard material (a “second region”). Fang, et al., resultingly, do not describe a composite such as is defined in Claim 1 of the present invention, inasmuch as the second region in Fang, et al. is not constituted of polycrystalline ultra-hard material, but of a much softer cermet material. The Examiner the foregoing in objecting to Claim 8 (Paragraph 8, Page 5 of the Office Action), where he states that “Fang, et al. disclose a composite material comprising a plurality of granules (cores) formed from mixtures of polycrystalline diamond (PCD) and polycrystalline cubic boron nitride (PcBN)...”.

Predicated on the foregoing, applicants respectfully submit that Claim 1, and resultingly the claims dependent therefrom, are deemed to clearly and patentably distinguish over Fang, et al. and possess the required novelty so as to be patentable thereover.

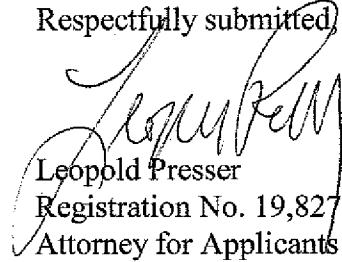
With regard to the rejection of Claim 8 as being obvious, applicants also submit the following in traverse of the rejection thereof by Fang, et al. under 37 C.F.R. §103(a):

Applicants submit that in view of the above discussion regarding Fang, et al., it is clear that the rejection of Claim 8 is also overcome. It is clear that the reference to particle sizes in Fang, et al. relates to the granules of the first region and not to the difference in particle sizes between the cores, on the one hand, and the matrix material, on the other hand, as is presently set forth in Claim 8. There is no suggestion in Fang, et al. that a composite can be formed of cores of one type or grade of polycrystalline ultra-hard material and a matrix of another grade or type of polycrystalline ultra-hard material, let alone that they may possess different particle sizes. Accordingly, Claim 8 is not only novel, but clearly defines an important inventive step over Fang, et al.

In summation, applicants respectfully submit that on the basis of the foregoing comments and amendments, as set forth in the present submission, the application is deemed to be clearly directed to allowable subject matter and the allowance of the claims and issuance of the Notice of Allowance by the Examiner is earnestly solicited.

However, in the event that the Examiner has any queries concerning the instantly submitted Amendment, applicants' attorney respectfully requests that he be accorded the courtesy of possibly a telephone conference to discuss any matters in need of attention.

Respectfully submitted,



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